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1b. RESTRICTIVE MARKINGS

2a. SECURITY CLASSIFICATION AUTHORITY

3. DISTRIBUTION/AVAILABILITY OF REPORT

2b. DECLASSIFICATION/DOWNGRADING SCHEDULE

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Packaging Division

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6c. ADDRESS (*City, State, and ZIP Code*)

U.S. Army Armament Research
Development Engineering Center
Picatinny Arsenal, NJ 07806-5000

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PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.

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Performance Oriented Packaging Testing (Fuze, Grenade Packed (1000) Per Fiberboard Box) DWG. 8882318

12. PERSONAL AUTHOR(S)

Michael W. Selk

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16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (*Continue on reverse if necessary and identify by block number*)
FIELD	GROUP	SUB-GROUP	Performance Oriented Packaging, POP, Fuze, Grenade In Fiberboard Box.

19. ABSTRACT (*Continue on reverse if necessary and identify by block number*)

This report contains the testing and test results performed on the Fuze, Grenades, Packed 1000 per fiberboard box.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT

☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT ☐ DTIC USERS

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DD Form 1473, JUN 86 *Previous editions are obsolete.* SECURITY CLASSIFICATION OF THIS PAGE

I. Report Number: DOD POP HM TR/AYD 91-017

II. Title: Performance Oriented Packaging Testing for Fuze, Grenades Packed 1000 per fiberboard box in accordance with DWG. 8882318.

Author: Michael W. Selk

Performing Activity: ARDEC

Address: Department of the Army
ARDEC
HQ, U.S. Army Armament, Munitions, and
Chemical Command
Picatinny Arsenal, N.J. 07806-5000
Attn: SMCAR-AEP

Date: 12 August 1991

1. Data:

Container:

Type: Box, Fiberboard
UN Code: 4G
Specification Number: PPP-B-636
Material: Fiberboard
Capacity: 29.6 Liters
Dimensions: 34.8cm x 30.16cm x 28.23cm
(13 11/16"x 11 7/8"x 11 1/8")
Gross Weight: 31.4kg (69lbs.)

Product:

Name: M219A2
Drawing Number: 9332611-1
United Nations Number: 0257
United Nations Packaging Group: II
United Nations Nomenclature: FUZES, DETONATING
Physical State: Solid
Amount Per Container: 1000 Grenade Fuzes
NSN: 1330-01-278-8976

Name: M219A2
Drawing Number: 9332611-2
United Nations Number: 0257
United Nations Packaging Group: II
United Nations Nomenclature: FUZES, DETONATING
Physical State: Solid
Amount Per Container: 1000 Grenade Fuzes
NSN: 1330-01-278-8977

Name: M219A1
Drawing Number: 9207971-1
United Nations Number: 0257
United Nations Packaging Group: II
United Nations Nomenclature: FUZES, DETONATING
Physical State: Solid
Amount Per Container: 1000 Grenade Fuzes
NSN: 1330-01-058-1643

Name: XM224
Drawing Number: 9211057-1
United Nations Number: 0257
United Nations Packaging Group: II
United Nations Nomenclature: FUZES, DETONATING
Physical State: Solid
Amount Per Container: 1000 Grenade Fuzes
NSN: 1330-01-054-8875

2. Background:

This report contains the testing and test results performed on fuzes packed in a fiberboard box, manufactured in accordance with PPP-B-636, Type SF, Class Weather Resistant, Grade V3S. One-thousand M219E1 fuzes were utilized to simulate the proper content weights. The weights of the three packed out boxes were 69lbs. each. The method of pack was consistent with DWG. 8882318.

3. Testing:

Note: All testing was in accordance with the referenced sections of CFR 49, except that one complete pack was used in lieu of multiple packs for each test.

Drop Test (178.603):

Procedure-

One container was dropped in the following orientations: flat on bottom, flat on top, flat on long-side, flat on short-side, and the top-right-rear corner. The height for all five drops was 1.2 meters.

Results-

There was no visble damage on the first four drops. On the corner drop the side edge of the outer box (corresponding to the corner of impact) split. The contents remained inside the container and the package was capable of being handled without danger of spillage, satisfying the passing criteria. It should be noted that this exceeded the requirements of CFR 49 since one container experienced all the drops as opposed to five separate containers experiencing one drop each.

Vibration Test (178.608):

Procedure-

One container was vibrated on a vibration table unrestrained for a one hour time period. The peak-to-peak displacement was one inch and the frequency was 210 cycles per minute. This frequency was sufficient to allow the pack to become completely airborn enabling a 1/16" peice of strapping material to be slid underneath the pack during testing.

Results-

The outer box received minor abrasions on all faces (except the top) from repetitive impacts with the side walls and base of the vibration table. The container experienced no structural damage and therefore there was no spillage of contents, satistying the passing criteria.

Stack Test (178.606):

Procedure-

A dead load of 630 lbs. was applied to the top of a single packed container for a 24 hour period. This simulates a stack height of 10 feet of identical packages.

Results-

The container uniformly compressed a total of 1/4 of an inch and adequately supported the load, satisfying the passing criteria.

5. Referenced Material:

A. Federal Register, "49 CFR Part 107, 1991"

6. Based on the above equivalent POP Testing, the following POP symbol has been applied to containers IAW Drawing 8882318.